

Application Number 10/693,012
Preliminary Amendment

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (Original): A programmer for a medical device, the programmer comprising:

a wireless telemetry circuit to communicate with the medical device;

a boost converter to convert a battery voltage to an operating voltage for the programmer;

and

a control circuit to inhibit pulse skipping by the boost converter based on a level of the battery voltage.

Claim 2 (Original): The programmer of claim 1, wherein the boost converter activates pulse skipping when the operating voltage exceeds a threshold value.

Claim 3 (Original): The programmer of claim 1, wherein the boost converter is a fixed-frequency switching mode boost converter.

Claim 4 (Original): The programmer of claim 1, wherein the control circuit includes a transistor coupled to transmit the battery voltage to the boost converter when the transistor is ON, wherein the transistor turns OFF when the battery voltage exceeds a threshold voltage.

Claim 5 (Original): The programmer of claim 4, wherein the control circuit includes a comparator to compare the battery voltage to the threshold voltage, wherein an output of the comparator is coupled to a gate of the transistor to turn the transistor ON and OFF based on the comparison.

Claim 6 (Original): The programmer of claim 4, wherein the transistor includes a MOSFET, and the transistor transmits the battery voltage, less a body diode drop of the MOSFET, to the boost converter when the transistor is OFF.

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Claim 7 (Original): The programmer of claim 4, wherein the transistor includes a MOSFET, and the transistor transmits the battery voltage, less a resistor voltage drop, to the boost converter when the transistor is OFF.

Claim 8 (Original): The programmer of claim 4, wherein the transistor includes a MOSFET, and the transistor transmits the battery voltage, less an external diode drop, to the boost converter when the transistor is OFF.

Claim 9 (Original): The programmer of claim 4, wherein the transistor includes a back-to-back MOSFET pair having a first MOSFET and a second MOSFET, and the transistor transmits the battery voltage less an external diode drop, to the boost converter when each of the first and second MOSFETs is OFF.

Claim 10 (Original): The programmer of claim 1, wherein the wireless telemetry circuit includes an antenna mounted internally within a housing associated with the programmer.

Claim 11 (Original): The programmer of claim 1, wherein the control circuit inhibits pulse skipping by the boost converter when the level of the battery voltage exceeds a threshold voltage.

Claim 12 (Original): The programmer of claim 11, wherein the threshold voltage is approximately 2.4 volts to 2.6 volts.

Claim 13 (Original): The programmer of claim 1, wherein the control circuit inhibits pulse skipping by the boost converter by limiting the level of the battery voltage applied to the boost converter.

Claim 14 (Original): The programmer of claim 1, further comprising a battery source to produce the battery voltage.

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Claim 15 (Original): The programmer of claim 1, wherein the battery source includes two or more AAA battery cells, AA battery cells, C battery cells, or D battery cells.

Claim 16 (Original): The programmer of claim 1, wherein the programmer is a handheld neurostimulation programmer.

Claim 17 (Original): The programmer of claim 1, wherein the operating voltage is approximately 2.2 to 3.2 volts.

Claim 18 (Original): A method for controlling a power supply in a programmer for a medical device, the method comprising:

applying a battery voltage to a boost converter to convert the battery voltage to an operating voltage for the programmer; and
inhibiting pulse skipping by the boost converter based on a level of the battery voltage.

Claim 19 (Original): The method of claim 18, further comprising activating pulse skipping by the boost converter when the operating voltage exceeds a threshold value.

Claim 20 (Original): The method of claim 18, wherein the boost converter is a fixed-frequency switching mode boost converter.

Claim 21 (Original): The method of claim 18, further comprising transmitting the battery voltage to the boost converter via a transistor, and turning the transistor OFF when the battery voltage exceeds a threshold voltage.

Claim 22 (Original): The method of claim 21, further comprising comparing the battery voltage to the threshold voltage with a comparator, wherein an output of the comparator is coupled to a gate of the transistor to turn the transistor ON and OFF based on the comparison.

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Claim 23 (Original): The method of claim 21, wherein the transistor is a MOSFET, and the transistor transmits the battery voltage less a body diode drop of the MOSFET to the boost converter when the transistor is OFF.

Claim 24 (Original): The programmer of claim 21, wherein the transistor includes a MOSFET, and the transistor transmits the battery voltage, less a resistor voltage drop, to the boost converter when the transistor is OFF.

Claim 25 (Original): The programmer of claim 21, wherein the transistor includes a MOSFET, and the transistor transmits the battery voltage, less an external diode drop, to the boost converter when the transistor is OFF.

Claim 26 (Original): The programmer of claim 21, wherein the transistor includes a back-to-back MOSFET pair having a first MOSFET and a second MOSFET, and the transistor transmits the battery voltage less an external diode drop, to the boost converter when each of the first and second MOSFETs is OFF.

Claim 27 (Original): The method of claim 21, wherein the programmer includes wireless telemetry circuitry with an antenna mounted internally within a housing associated with the programmer.

Claim 28 (Original): The method of claim 21, further comprising inhibiting pulse skipping by the boost converter when the level of the battery voltage exceeds a threshold voltage.

Claim 29 (Original): The method of claim 28, wherein the threshold voltage is approximately 2.4 volts to 2.6 volts.

Claim 30 (Original): The method of claim 21, further comprising inhibiting pulse skipping by the boost converter by limiting the level of the battery voltage applied to the boost converter.

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Claim 31 (Original): The method of claim 21, further comprising supplying the battery voltage from a battery source.

Claim 32 (Original): The method of claim 31, wherein the battery source includes two or more AAA battery cells, AA battery cells, C battery cells, or D battery cells.

Claim 33 (Original): The method of claim 21, wherein the programmer is a handheld neurostimulation programmer.

Claim 34 (Original): The method of claim 21, wherein the operating voltage is approximately 2.2 to 3.2 volts.

Claim 35 (Original): A system for controlling a power supply in a programmer for a medical device, the system comprising:

means for applying a battery voltage to a boost converter to convert the battery voltage to an operating voltage for the programmer; and

means for inhibiting pulse skipping by the boost converter based on a level of the battery voltage.

Claim 36 (Original): The system of claim 35, further comprising means for activating pulse skipping by the boost converter when the operating voltage exceeds a threshold value.

Claim 37 (Original): The system of claim 35, wherein the boost converter is a fixed-frequency switching mode boost converter.

Claim 38 (Original): The system of claim 35, wherein the battery voltage is transmitted to the boost converter via a transistor, the system further comprising means for turning the transistor OFF when the battery voltage exceeds a threshold voltage.

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Claim 39 (Original): The system of claim 38, wherein the transistor is a MOSFET, and the transistor transmits the battery voltage less a body diode drop of the MOSFET to the boost converter when the transistor is OFF.

Claim 40 (Original): The system of claim 38, wherein the transistor includes a MOSFET, and the transistor transmits the battery voltage, less a resistor voltage drop, to the boost converter when the transistor is OFF.

Claim 41 (Original): The system of claim 38, wherein the transistor includes a MOSFET, and the transistor transmits the battery voltage, less an external diode drop, to the boost converter when the transistor is OFF.

Claim 42 (Original): The system of claim 38, wherein the transistor includes a back-to-back MOSFET pair having a first MOSFET and a second MOSFET, and the transistor transmits the battery voltage less an external diode drop, to the boost converter when each of the first and second MOSFETs is OFF.

Claim 43 (Original): The system of claim 35, wherein the programmer includes wireless telemetry circuitry with an antenna mounted internally within a housing associated with the programmer.

Claim 44 (Original): The system of claim 35, further comprising means for inhibiting pulse skipping by the boost converter when the level of the battery voltage exceeds a threshold voltage.

Claim 45 (Original): The system of claim 35, wherein the threshold voltage is approximately 2.4 volts to 2.6 volts.

Claim 46 (Original): The system of claim 35, further comprising means for inhibiting pulse skipping by the boost converter by limiting the level of the battery voltage applied to the boost converter.

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Claim 47 (Original): The system of claim 35, further comprising a battery source to supply the battery voltage.

Claim 48 (Original): The system of claim 47, wherein the battery source includes two or more AAA battery cells, AA battery cells, C battery cells, or D battery cells.

Claim 49 (Original): The system of claim 35, wherein the programmer is a handheld neurostimulation programmer.

Claim 50 (Original): The system of claim 35, wherein the operating voltage is approximately 2.2 to 3.2 volts.

Claim 51 (New): A neurostimulation system comprising:

- an implantable neurostimulator; and
- a programmer for the neurostimulator, the programmer including a wireless telemetry circuit to communicate with the medical device, a boost converter to convert a battery voltage to an operating voltage for the programmer, wherein the boost converter activates pulse skipping when the operating voltage exceeds a threshold value, and the boost converter is a fixed-frequency switching mode boost converter, and a control circuit to inhibit pulse skipping by the boost converter based on a level of the battery voltage.

Claim 52 (New): The system of claim 51, wherein the control circuit inhibits pulse skipping by the boost converter when the level of the battery voltage exceeds a threshold voltage.

Claim 53 (New): The system of claim 51, wherein the threshold voltage is approximately 2.4 volts to 2.6 volts.

Claim 54 (New): The system of claim 51, wherein the control circuit inhibits pulse skipping by the boost converter by limiting the level of the battery voltage applied to the boost converter.

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Claim 55 (New): The system of claim 51, further comprising a battery source to produce the battery voltage.

Claim 56 (New): The system of claim 51, wherein the battery source includes two or more AAA battery cells, AA battery cells, C battery cells, or D battery cells.

Claim 57 (New): The system of claim 51, wherein the programmer is a handheld neurostimulation programmer.

Claim 58 (New): The system of claim 51, wherein the operating voltage is approximately 2.2 to 3.2 volts.